इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 10026-3-2 (1999): Insulating varnishes containing solvents, Part 3: Specifications for individual materials, Section 2: Requirements for Hot Curing Varnishes [ETD 2: Solid Electrical Insulating Materials and Insulation Systems]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS 10026 (Part 3/Sec 2) : 1999

(Reaffirmed 2004)

भारतीय मानक

विलायक युक्त विद्युतरोधी वार्निश

भाग 3 अलग-अलग सामग्री के लिये विशिष्टियाँ

अनुभाग 2 तप्त उपचार को फिनिश देने की वार्निश के लिए अपेक्षाएं

(पहला पुनरीक्षण)

Indian Standard

INSULATING VARNISHES CONTAINING SOLVENTS

PART 3 SPECIFICATIONS FOR INDIVIDUAL MATERIALS

Section 2 Requirements for Hot Curing Varnishes

(First Revision)

ICS 87.060.30

© BIS 1999

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 1999 **Price Group 2**

Solid Electrical Insulating Materials Sectional Committee, ETD 02

FOREWORD

This Indian Standard (Part 3/Sec 2) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Solid Electrical Insulating Materials Sectional Committee had been approved by the Electrotechnical Division Council.

This standard is one of the series of Indian Standards which deals with insulating varnishes containing solvents. The series comprises the following three parts:

Part 1 Definitions and general requirements,
Part 2 Methods of tests, and
Part 3 Specifications for individual materials.

This standard (Part 3/Sec 2) covers the requirements for hot curing impregnating varnishes and include requirements for certain properties at elevated temperature.

In preparing this standard assistance has been derived from IEC Pub 464-3-2 (1989) 'Specification for insulating varnishes containing solvent — Part 3: Specification for individual materials; Sheet 2 Requirements for hot curing impregnating varnishes' issued by the International Electrotechnical Commission (IEC).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numercial values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

INSULATING VARNISHES CONTAINING SOLVENTS

PART 3 SPECIFICATIONS FOR INDIVIDUAL MATERIALS

Section 2 Requirements for Hot Curing Varnishes

(First Revision)

1 SCOPE

This standard (Part 3/Sec 2) covers the requirements for hot curing impregnating varnishes and include requirements for certain properties at elevated temperature.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 IDENTIFICATION

For the purpose of this specification, the varnishes are identified as follows:

Type 130 X: Properties specified at 130°C flexible
Type 130 R: Properties specified at 130°C hard
Type 155 X: Properties specified at 155°C flexible
Type 155 R: Properties specified at 155°C hard
Type 180 X: Properties specified at 180°C flexible
Type 180 R: Properties specified at 180°C hard
Type 200 X: Properties specified at 200°C flexible
Type 200 R: Properties specified at 200°C hard
Type 220 X: Properties specified at 220°C flexible
Type 220 R: Properties specified at 220°C hard

The purchaser contract shall contain the material designation, for example, IS 10026 (Part 3/Sec 2) Type 130 R.

4 REQUIREMENTS

All material in a consignment shall comply with the requirements of IS 10026 (Part 1) for colour, conditions of supply and shelf life and shall, in addition, comply with the requirements of Tables 1 and 2 of this section.

Requirements for properties such as density, dilution ability, stability in an enclosed vessel, resistance to insulating liquids bond strength, resistance to mould growth and resistance tracking are not included in Table 1. When the purchaser requires a varnish to comply with any of these requirements, the particular requirements shall be indicated in the enquiry and order. The supplier may provide corresponding values in the data sheet of the material. All tests, however, shall be carried out in accordance with IS 10026 (Part 2) or, for resistance to mould growth, IS 9000 (Part 10).

5 SAMPLING

5.1 The samples shall be submitted packed in three different containers, each containing not less than one litre of the material.

5.2 Representative samples of the material shall be drawn as prescribed in IS 197.

Table 1 Requirements

(*Clause* 4)

Property	Test Method IS 10026 (Part 2) Clause No.	Requirement of All Types	Remarks
Viscosity	5	Within +10 percent of nominal value	Nominal value to be agreed between purchaser and supplier
Non-volatile matter	6	Within +2 percent of nominal value	Nominal value to be agreed between purchaser and supplier
Flash point	8	Not less than agreed between purchaser and supplier	If in a particular country the safety regulations for the application of a material specify a minimum flash point, a material to be used in that country shall comply with that requirement
Ability to cure in considerable thickness	10	Not worse than SL, UL and I 4, 2 uniform	
Stability of varnish in an open vessel	14	Increase in viscosity L to not more than 4 × nominal value	Nominal value to be agreed between purchaser and supplier
Effect of varnish on enamelled wires	15	Pencil hardness not softer than H	
Effect of water immersion on volumes resistivity	19	Before immersion not less than 10^{12} Ω.cm. After immersion not less than 10^8 Ω.cm.	After an immersion time of seven days
Effect of water immersion of electric strength	20	Before immersion not less than 70 kV/mm. After immersion, not less than 60 kV/mm	After an immersion time of seven days
Resistance to vapour of solvents	22	No change in adherence, no peeling, blistering, draining, no stickness. NOTE — A small amount of stickiness may be permitted.	This test applies only for materials included in 'e' type equipment

Table 2 Requirements

(*Clause* 4)

Property	**Test Method IS 10026 (Part 2) Clause No.**	**Requirement**										**Remarks**
		Type										
		130X	130R	155X	155R	180X	180R	200X	200R	220X	220R	
Flexibility (Mandrel test)	16.1	Pass		Pass		Pass		Pass		Pass		To pass there shall be no cracking. Film thickness 0.03 to 0.05 mm. Temperature for preparation of specimen in accordance with IS 10026 (Part 2) to be that recommended by the supplier
Bond strength	18											
Electric strength at elevated temperature	23	> 30kV/ mm at 130°C	>30kV/ mm at 130°C	>30 kV/ mm at 155°C	>30 kV/ mm at 155°C	>30 kV/ mm at 180°C	>30 kV/ mm at 180°C	>30 kV/ mm at 200°C	>30 kV/ mm at 200°C	>30 kV/ mm at 220°C	>30 kV/ mm at 220°C	
Temperature index	IS 8504 (Part 1) IS 11256 (Part 1)	—	130	—	155	—	180	—	200	—	220	To be tested using any two of the following three criteria: — bond strength to 50 percent of initial value to IS 8504 (Part 1) or — loss of mass of 30 percent to IS 8504 (Part 1) or — Breakdown voltage to 3 kV to IS 11256 (Part 1). The requirement given is the minimum temperature index
Temperature index	IS 8504 (Part 1) IS 11256 (Part 1)	130	—	155	—	180	—	200	—	220	—	To be tested in accordance with IS 11256 (Part 1). In addition to be tested to IS 8504 (Part 1) either for bond strength 50 percent of the initial value or loss of mass of 30 percent[1]. The requirement given is the minimum temperature index

[1] The substrate shall be glass fabric according to IS 11256 (Part 1) with a specimen size of 100 mm × 100 mm and of a maximum thickness of 0.160 mm.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
197 : 1969	Methods of sampling and test for varnishes and lacquers (*first revision*)
8504 (Part 1) : 1994	Guide for determination of thermal endurance properties of electrical insulating materials: Part 1 General guidelines for ageing procedures and evaluation of test results (*first revision*)
9000 (Part 10) : 1979	Basic environmental testing procedure for electronic and electrical items: Part 10 Mould growth test
10026	Insulating varnishes containing solvents:
(Part 1) : 1981	Definitions and general requirements
(Part 2) : 1982	Methods of tests
11256 (Part 1) : 1985	Methods of test for determination of thermal endurance of insulating varnishes: Part 1 Electric strength method

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc : No. ET 02 (3893).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	323 76 17 323 38 41
Eastern	: 1/14 C. I.T. Scheme VII M, V. I. P. Road, Kankurgachi CALCUTTA 700 054	337 84 99, 337 85 61 337 86 26, 337 91 20
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43 60 20 25
Southern	: C. I. T. Campus, IV Cross Road, CHENNAI 600 113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	832 92 95, 832 78 58 832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM.

Printed at Printograph, New Delh, Ph.: 5726847